

PATENT SPECIFICATION

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COMPLETE SPECIFICATION

NO DRAWINGS

Composite Material

We, SCHUSTERINSEL OPLADEN TEXTIL-VEREDLUNGS G.M.B.H., of Opladen, Germany, a body corporate organised under the Laws of Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention relates to a composite material which is especially useful as a textile floor covering or for other purposes.

According to the present invention there is provided a composite material, comprising a top textile layer of knitted fabric and a bottom plastics layer of plasticised polyvinyl chloride which has been foamed and which contains a powdered elastomer.

The present material can provide a textile floor covering which is cheap and combines the desirable surface structure and strength of the knitted fabric with the advantages of a thermoplastic floor covering. The function of the knitted fabric as top layer is to give the floor covering a textile velvety appearance. Preferably, the knitted fabric is formed from synthetic fibres, made, for example of polyamides, polyesters or polyacrylonitrile. However, the knitted fabric can be made of natural textile fibres, such as wool. The knitted fabric is a warp knit or raschel fabric which is either veloured or teased, or teased and cut.

The object of the plastics coating is to give the covering a soft carpet-like feel when walked on. To this end, the plastics layer must be bulky and resilient. This property is produced by two means which are used in combination. The first means is provided by working a very finely-divided elastomer, preferably rubber powder, in a

proportion of from 20 to 50% by weight on the basis of the thermoplastics, into the plastics layer which is of plasticised polyvinyl chloride. The other means is the use of a foaming agent, such as azodicarbonamide, to foam the plasticised polyvinyl chloride. Very good results are obtained when the plasticised polyvinyl chloride is foamed and contains a powdered elastomer in the proportions specified. The plastics coating can also contain mineral fillers and colouring agents and stabilizers.

For improving adhesion between the plastics layer and the knitted fabric, an intermediate layer of polyvinyl chloride containing an adhesion-promoter e.g., an isocyanate-modified polyester, may be used, if desired.

In order to enable the floor covering to be laid using the known aqueous plastics dispersion adhesives, the underside can be lined with a woven fabric e.g. of jute. To facilitate laying, the side to be laid in contact with the floor can be provided with an adhesive layer protected by a pull-off foil e.g. silicone-treated paper, which is pulled off shortly before laying.

The present composite material can be shaped e.g. by vacuum deep drawing, just like thermoplastic slabs and so on, and can therefore be adapted to complicated floor shapes such as are found, for instance, in private motor vehicles.

The invention will now be illustrated by the following Examples.

Example 1.

A coloured warp knit fabric consisting of polycaprolactam yarns was teased on a teasing machine and then cut. After carding, the underside of the knitted fabric thus prepared was coated with an intermediate layer

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of the following composition:

- 100 g. of polyvinyl chloride
- 60 g. of dioctylphthalate
- 20 g. of chalk
- 10 g. of soot

- 13 g. of a polyester formed from adipic acid, hexanediol and trimethylol propane, as adhesion promoter
- 11.4 g. of a 75% solution of an isocyanate resin prepared from trimethylol propane and toluenediisocyanate.

The coated fabric was then heated to about 120°C. to gel the polyvinyl chloride.

- 15 The applied material comprised 80 g./m.² of dry substance. The function of this layer was to ensure that the next coat adhered to the knitted fabric satisfactorily.

- A paste having the following composition was then applied in a quantity of 600 g./m.² to this intermediate layer:

- 100 g. of polyvinylchloride
- 75 g. of dioctylphthalate
- 30 g. of powdered rubber
- 25 2 g. of azodicarbonamide.
- 6 g. of lead phthalate

The coating on the fabric was then foamed and gelled at 185°C. for about 1 minute.

Example 2.

- 30 A knitted fabric of polyamide yarn was prepared and provided with an intermediate layer as described in Example 1 whereafter a plastics bottom layer having the following composition was applied in a quantity of 600 g./m.²:

- 100 g. of polyvinyl chloride
- 30 g. of powdered rubber
- 60 g. of dioctylphthalate
- 25 g. of benzyl-butyl phthalate
- 40 2 g. of azodicarbonamide
- 6 g. of lead phthalate

- The plastics layer was foamed by heating it for a few minutes at 190°C. and simultaneously gelled. A teased cut knitted fabric having an elastically foamed plastics bottom layer about 3 mm. thick was obtained.

Example 3.

- 50 A knitted fabric of polyamide yarn is prepared and provided with an intermediate layer as described in Example 1 whereafter a plastics bottom layer having the following composition was applied in a quantity of 1200 g./m.²:

- 55 100 g. of polyvinyl chloride
- 30 g. of powdered rubber
- 30 g. of benzyl-butyl phthalate
- 20 g. of dioctylphthalate
- 50 g. of polymer plasticiser (mixture of polypropylene adipate and phthalate)
- 60 2 g. of lead phthalate
- 4 g. of azodicarbonamide

- The plastics layer was foamed and simultaneously gelled by being heated to 190°C.
- 65 for a few minutes. A teased cut knitted

fabric having a resiliently foamed plastics bottom layer about 6 mm. thick was obtained.

WHAT WE CLAIM IS:—

- 1. A composite material, comprising a 70 top textile layer of knitted fabric and a bottom plastics layer of plasticised polyvinyl chloride which has been foamed and which contains a powdered elastomer.

- 2. A material as claimed in claim 1, 75 wherein the elastomer is rubber powder.

- 3. A material as claimed in claim 1 or 2, wherein the knitted fabric is made of synthetic fibres.

- 4. A material as claimed in claim 1 or 80 2, wherein the top textile layer is a teased knitted fabric.

- 5. A material as claimed in claim 4, wherein the top textile layer is a teased and cut knitted fabric.

- 6. A material as claimed in claim 5, 85 wherein the top textile layer is a veloured knitted fabric.

- 7. A material is claimed in any one of claims 1 to 6, wherein an intermediate layer of polyvinylchloride containing an adhesion promoter is disposed between the top textile layer of knitted fabric and the bottom plastics layer.

- 8. A material as claimed in any one of 95 claims 1 to 7, wherein the material is lined on the underside with a woven fabric.

- 9. A material as claimed in claim 8, wherein the woven fabric is of jute.

- 10. A material as claimed in any one of 100 claims 1 to 7, wherein the plastics layer has an adhesive layer on the side to be laid in contact with a floor.

- 11. A composite material substantially as hereinbefore described in any one of the foregoing Examples.

- 12. A process for manufacturing the composite material claimed in any one of 110 claims 1 to 11, wherein a polyvinyl chloride paste containing an adhesion-promoter is first applied to the underside of synthetic knitted fabric, and gelled by heat treatment, whereafter a polyvinyl chloride paste containing a foaming agent and a powdered elastomer is applied, foamed by heat treatment and gelled.

- 13. A process as claimed in claim 12, wherein the foamable polyvinyl chloride paste also contains a filler, a colouring agent and/or a stabiliser.

- 14. A process for preparing a composite material substantially as hereinbefore described in any one of the foregoing Examples.

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